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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,972	08/01/2006	Eitan Zait	P-8503-US	7182
49443	7590	01/07/2009		
Pearl Cohen Zedek Latzer, LLP			EXAMINER	
1500 Broadway			FRASER, STEWART A	
12th Floor				
New York, NY 10036			ART UNIT	PAPER NUMBER
			1795	
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			01/07/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/564,972	Applicant(s) ZAIT ET AL.	
	Examiner STEWART A. FRASER	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/18/2006, 2/21/2006, 4/14/2008 and 4/15/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This is the initial office action for US Patent Application No. 10/564972 titled, "Method for Correcting Critical Dimension Variations in Photomasks".
2. Claims 1-11 are currently pending and have been fully considered.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by ZIGER (US 2003/0157415).

The ZIGER reference recites a method for compensating critical dimension deviations across a photomask. With respect to claim 1, ZIGER teaches (Claim 11) a method of compensating for deviations in critical dimensions of photoresist patterns in a photomask, comprising steps of generating a deviation map indicating deviation of the critical dimension from a target dimension for each of the regions in the photomask, determining an amount of actinic radiation needed to be attenuated to compensate for the critical dimension deviation from the target dimension in each of the regions of the photomask, and attenuating transmission of the

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actinic radiation through each of the regions in the photomask by the determined attenuation amount of actinic radiation such that the critical dimension deviation is compensated to the target dimension for each of the regions in the photomask. ZIGER further teaches (Claim 13) that the actinic radiation is attenuated by either implanting a dopant species in one or more regions of the photomask substrate, wherein the dopant species is adapted to decrease transmission of the actinic radiation through the one or more regions or (Claim 14) depositing a layer of semitransparent material in one or more regions of the photomask substrate to attenuate transmission of the actinic radiation through the one or more regions in the photomask.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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7. Claims 2-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over ZIGER (US 2003/0157415) in view of ZAIT et al. (US 2002/0086245).

The ZIGER reference recites a method for compensating critical dimension deviations across a photomask. The ZIGER reference does not appear to explicitly teach the limitations of claims 2-11 directed to the use of a pulsed laser to form elements that attenuate light. However, the ZAIT reference recites a method of manufacturing patterns on a reticle, the method comprising providing at least one of a plurality of ultra-short pulsed laser beams.

In view of claims 2-6, ZAIT teaches [0065] a method of employing a pulsed laser wherein reverse writing is performed on a reticle blank. A reticle pattern is obtained by direct writing using pulsed laser irradiation directed at the surface opposite the coated surface of the reticle through the substrate of the reticle blank and onto the chrome coating. ZAIT discloses [0089] that while the concept of producing phase shift elements to reduce or eliminate higher order diffraction patterns is not new, it is the introduction of reverse writing in reticle blanks and using parallel writing techniques as well as direct writing of internal phase shift elements inside the substrate volume that render this particular embodiment of the present invention novel and unique. In view of claims 7-11, ZAIT teaches [0104] that with femtosecond laser technology, it is easy to modify the phase values of the inscribed elements by controlling parameters, such as laser pulse energy, speed and number of pixels, with operating software.

At the time of the invention, one of ordinary skill in the art would have been able to modify the teachings of ZIGER by applying a known technique of direct writing, as taught by ZAIT, in order to compensate for critical deviations across a photomask. ZAIT discloses [0092] that employing an ultra-short pulsed laser process provides advantages of better process control,

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reduced number of steps, which endangers reliability, as well as reduced sensitivity to optical aberrations. By modifying the teachings of ZIGER with the teachings of ZAIT, one of ordinary skill in the art would have been able to devise a method for compensating critical dimension deviations across a photomask with pulsed laser technology. Therefore, the claims specified in the instant application would have been obvious at the time the invention was made.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEWART A. FRASER whose telephone number is (571)270-5126. The examiner can normally be reached on Monday to Thursday 6:30 am to 3:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F. Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark F. Huff/

Supervisory Patent Examiner, Art Unit 1795

/Stewart A Fraser/

Examiner, Art Unit 1795